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AUTHOR Yates, Frank H., Jr.: Brown, Benjamin H., Jr.
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ABSTRACT

The purpose of this report is to examine some of the variations among local education agencies in their access to financial resources, educational services, and educational programs. Application of the Office of Education expenditure disparity test on the spending of Tennessee school districts in 1977-78 revealed that the arrangement for funding public schools from state and local sources does not come within the acceptable range suggested for equitable funding. The ratio between the per pupil expenditure levels of the high and low revenue districts approximates two to one and is much greater when only local funds are considered. It seems clear that students in the highest expenditure school systems have greater access to classroom teacher time along with the specialized services of other professional personnel. Access to a more varied academic program seems also to confer on students of high expenditure districts greater opportunities for the kinds of programs that each individual student needs and desires. (Author/IRT)

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ACCESS TO EDUCATIONAL RESOURCES IN TENNESSEE

by

Frank H. Yates, Jr.
Benjamin H. Brown, Jr.

Prepared for the
Tennessee School Finance Project
State Department of Education
Nashville, Tennessee
1978

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FOREWORD

This report is the product of one in a series of studies initiated by the Tennessee School Finance Equity Study Project as part of a detailed review of the State's program for financing the public schools, kindergarten through grade twelve. It presents an analysis of existing disparities in the equity, adequacy and accessibility of programs of education among local education agencies in Tennessee. Neither the findings, the implications, the conclusions, nor the recommendations are necessarily those supported by the Study Project, the State Department of Education, or the Joint Legislative Committee on Elementary/Secondary School Finance all of whom are cooperating in sponsoring the overall study. This report represents a part of a larger body of knowledge which is being gathered by the Study Project so that viable alternatives can be examined and considered upon their merits. This study along with others conducted for the School Finance Equity Study Project is funded by the U.S. Office of Education, Department of Health, Education and Welfare, under Section 842 of P.L. 93-380. However, the opinions expressed do not necessarily reflect the position or policy of the U.S. Office of Education.

James E. Gibbs
Director
Tennessee School Finance
Equity Study Project

Sam H. Ingram
Commissioner
Tennessee Department
of Education

September, 1978

TENNESSEE SCHOOL FINANCE EQUITY STUDY

PROJECT STAFF

Dr. James E. Gibbs, Director

Dr. Benjamin H. Brown, Jr., Assistant Director

Dr. Frank H. Yates, Jr., Assistant Director

Mrs. Betty W. Long, Editor-Analyst

Mrs. Shirley Patton, Secretary

School Finance Equity Study Project
129 Cordell Hull Building
Nashville, Tennessee 37219
(615) 741-3046

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ACCESS TO EDUCATIONAL RESOURCES IN TENNESSEE

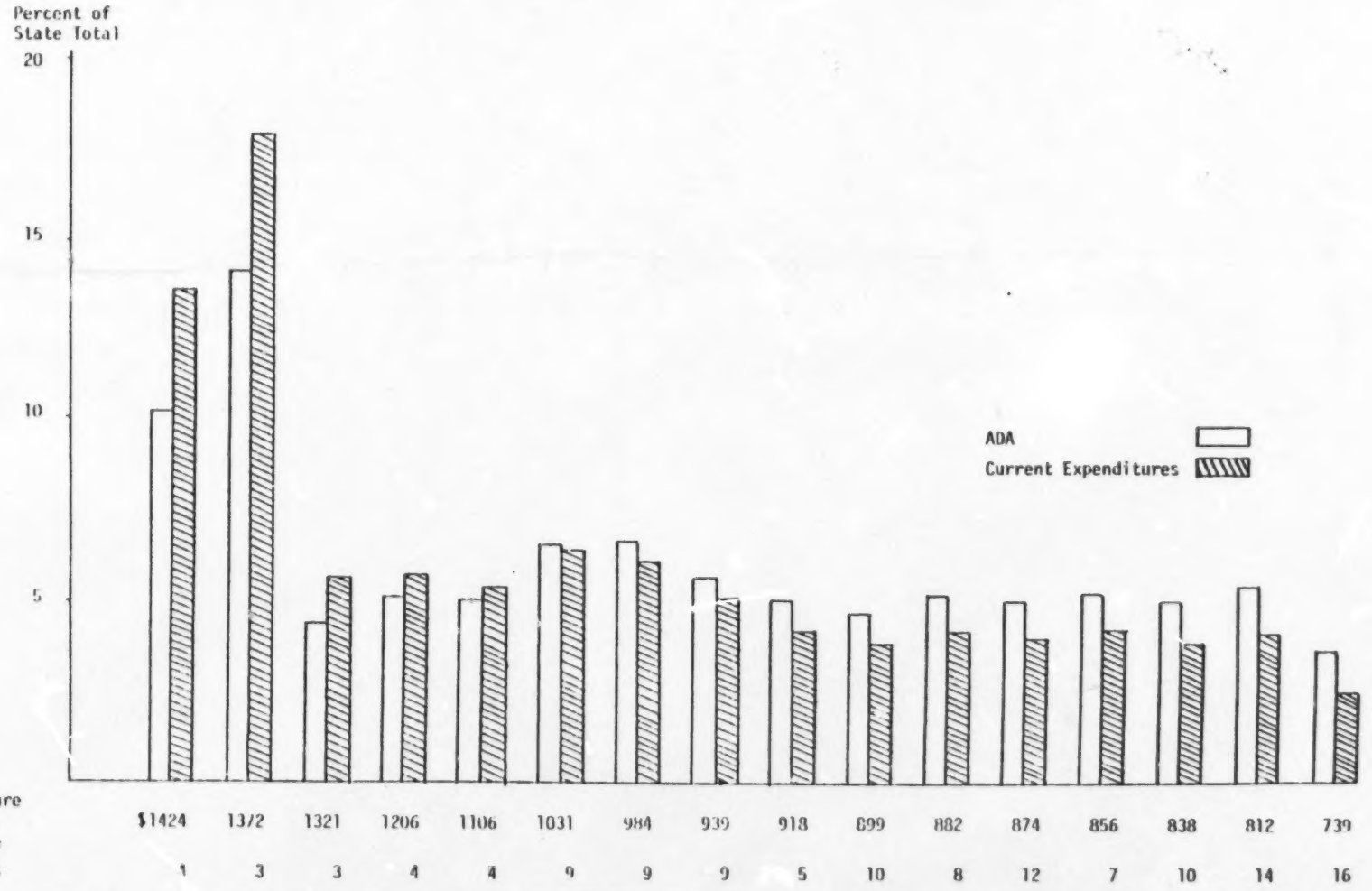
An important problem confronting a state which seeks to provide equal educational opportunities for children and youth in the public schools is to identify in practical terms what is meant by equality of educational opportunity. One of the functional ways this ideal has been defined is in terms of equal access to needed educational programs. More precisely, this refers to equalizing expenditures for free public education among the local educational agencies of the state in such a way as to provide for the additional cost of meeting the special educational needs of particular groups or categories of pupils such as for vocational education or services for handicapped children. The purpose of this report is to examine some of the variations among local education agencies in access to (1) financial resources, (2) educational services, and (3) educational programs.

Access To Financial Resources

Expenditures for operation and maintenance of programs of public education among the local school systems in Tennessee are subject to wide variations. According to the Annual Statistical Report of the Department of Education, (1976-77), current expenditure per pupil in average daily attendance ranged from a high of $1,566 to a low of $705 in comprehensive (kindergarten through grade 12) school districts. This difference represents a ratio of more than two to one and must be attributable to either wealth, effort, or some combination of these two variables.

Figure 1 portrays graphically the differences in financial resources available to pupils in the 127 local education agencies which were serving pupils in all grades during 1976-77. These school systems contained 96.9

Figure 1. Disparity In Current Expenditure Per ADA Among Comprehensive School Districts In Tennessee, 1976-77

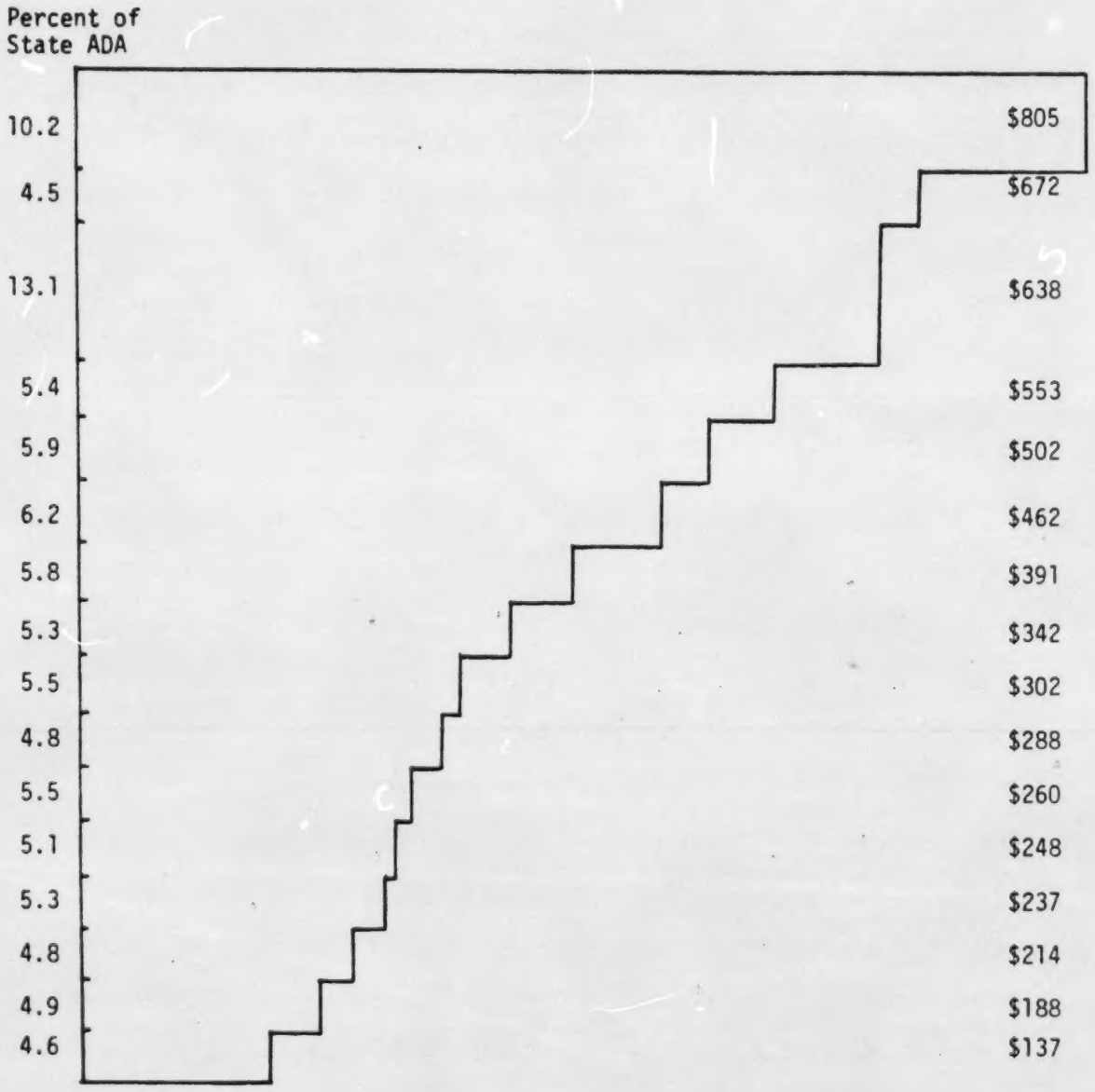


Source: Calculated from Annual Statistical Report of Tennessee Department of Education, 1976-77.

percent of the pupils in average daily attendance and spent slightly more than 97 percent of the funds expended by public school systems for the operation of programs of education. It is interesting to note that more than two percent of all current expenditures were spent in behalf of one and one-half percent of all students. Further, 28.7 percent of all students were supported by more than 37 percent of the total current operating funds. This disparity between pupils and funds is not limited to the upper expenditure levels, for at the other end of the expenditure scale, 3.6 percent of all pupils were served by less than 2.5 percent of all current funds. Moreover, 6.6 percent of all current expenditures were made in behalf of slightly under nine percent of all pupils.

The differential between funds available to pupils between the high and low expenditure districts seems substantial. Therefore, the reason for this variation was subjected to further examination. For purposes of this study, it was assumed that State and federal funds for current use were expended during the year in which such appropriations were received along with the required local contribution to the Tennessee Foundation Program. The remainder of current expenditures were considered to be derived from local sources. Variations in local current funds were found to range from a high of $847 to a low of $83 or a ratio slightly greater than ten to one. Although the total current expenditure per pupil in average daily attendance varied more than one hundred percent, the current expenditure per pupil in average daily attendance from local funds differed by as much as one thousand percent. Figure 2 represents the differences in per pupil amounts among the 127 districts. It can be observed that at one extreme, 10.2 percent of the pupils in average daily attendance were maintained with almost

Figure 2. CURRENT EXPENDITURE PER ADA FROM LOCAL FUNDS IN 127 COMPREHENSIVE SCHOOL SYSTEMS IN TENNESSEE, 1976-77



Source: Annual Statistical Report, Department of Education, 1976-77.

19 percent of the current funds from local sources. On the other hand, approximately 3.7 percent of current expenditures from local sources were spent in behalf of approximately 9.5 percent of the pupils.

The 127 public school systems were ranked according to total current expenditure per pupil and by current expenditure per pupil from local sources. A rank-order correlation coefficient of +.79 was calculated as the measure of relationship between these two variables. Generally the districts which spent the most per pupil in average daily attendance for current operation were also the school systems which received the highest level of support per pupil from local funds. It seems worthy of note that the Minimum Foundation Program for 1976-77 consisted of approximately 95 percent State funds and five percent from the required local contribution. A relatively low level of equalization was effected by the Minimum Foundation Program, and the State funds apportioned approximated a flat grant per student to local education agencies. It is then not surprising that variations in total current expenditure per pupil occurred almost simultaneously with the differences in local expenditure per pupil.

A revenue (or expenditure) disparity test developed by the U.S. Office of Education and employed by the courts and school finance authorities was utilized to measure the degree to which State and local revenues for current operation of educational programs for 1977-78 were equalized. School districts in Tennessee were ranked in descending order according to State and local revenues per pupil available for current operations. The school districts at the 5th percentile and the 95th percentile levels of revenue per student were identified. Under the test, the amount of revenue per child at the 95th percentile level should not exceed that at the 5th percentile

level by more than 25 percent. The procedure for calculating the percent of disparity may be expressed algebraically as follows:

A = Revenue per pupil for current operations in the school district having the student at the 5th percentile (from the bottom) level

B = Revenue per pupil for current operations in the school district having the student at the 95th percentile level

D = Disparity

$$\frac{B - A}{A} = D$$

The school district at the 95th percentile level of available State and local revenue per pupil for current operation of educational programs had $1,514 revenue per pupil and the school district at the 5th percentile had $794 revenue per pupil. The larger revenue per pupil amount was 90.7 percent greater than the smaller revenue figure. Application of the test revealed that the arrangement for funding public schools from State and local sources in Tennessee does not come within the acceptable range suggested for equitably funding programs of public education.

If the decision were made to bring the revenue from State and local sources for all pupils below the 25th percentile up to that level, it is estimated that a total of approximately $11.25 million would be required. A decision to bring current revenue per pupil up to the level found at the mid point or 50th percentile would necessitate additional funds amounting to approximately $61 million.

Access To Educational Services

Public school districts in Tennessee are currently putting forth varying degrees of effort to provide quality education. This undertaking encompasses many significant services in addition to the regular classroom setting. The purpose of this phase of the study is to examine the disparity of certain educational services among school districts in Tennessee in an attempt to answer in part the following question: What does the "extra" educational dollar purchase in terms of additional services for students? In this context, the "extra" educational dollar is defined as the disparity between the highest and lowest expenditure districts, and the investigation is an attempt to see if the additional expenditures are actually translated into additional services.

The level and scope of educational services provided for each child largely determines the citizen's evaluation of the quality of a particular school system. An educated public is aware of the increasing demand upon schools to provide much more than the traditional teacher-classroom environment. In addition to the task of providing a basic education, schools are now called upon to function as counselor for those who have personal problems, cook for those whose nutritional needs are not met, supplier of special training and experiences for the nation's young handicapped, and as career adviser and provider of on-the-job experiences for those desiring specialized vocational training. Originally conceptualized as auxiliary in nature, these services are now regarded as necessary to a good quality of education and are requiring increased funding for staff and facilities. Services regarded as indicative of quality and examined for disparity in this part of the study consist of:

1. Pupil-teacher ratio,
2. Teacher training and experience,
3. Guidance, psychological and social services provided,
4. Library services
5. Instructional materials and supplies,
6. Textbooks, and
7. Maintenance and operation of school plants.

Other variables not included for analysis may or may not contribute to the overall quality of the systems included. It is beyond the scope of this phase of the study to attempt to quantify increments of program quality added by any single program component. The study does provide a measure of the degree to which these indications of quality were provided during the 1976-77 school year.

Methodology

Twenty of the 147 districts operating during this period did not provide K-12 programs. These districts were eliminated from the disparity analysis because of data not compatible for analysis with K-12 systems. The remaining 127 districts were ranked in descending order by 1976-77 fiscal year current expenditures per ADA. The 127 districts ranked for analysis were serving 96.9 percent of the State ADA and had current expenditures representing 97.2 percent of the State total.

Two groups of districts were chosen from the 127. Group one consisted of the districts which ranked from 1-20 in current expenditure per ADA. Group two consisted of districts ranking from 108-127 in current expenditure per ADA. The average expenditures in groups one and two were $1,317

and $755 per ADA respectively. The State average was $1,066.

Specific measures of each of the services included in this analysis are discussed under the appropriate subsections. Comparisons of the disparity of those measures with the corresponding expenditure levels are discussed in an attempt to understand the relationship between the expenditure rank and the level of service provided.

Pupil-Teacher Ratio

The need to reduce the pupil-teacher ratio is perhaps the most common and costliest appeal made by administrator and teacher alike. It is beyond the scope or intent of this investigation to attempt to measure the effect on educational attainment of lowering this ratio or to calculate the specific cost involved. Research has been conducted demonstrating the positive effect on learning of providing a smaller group setting with increased individual teacher attention given to each pupil.

The establishment of a "one-to-one" pupil-teacher setting remains an educational ideal and an economic impossibility. The degree to which school districts in Tennessee have been able to move in this direction has in general been related to their ability and/or willingness to increase per pupil expenditures.

The average pupil-teacher ratio in Tennessee during the 1976-77 school year was 21.9 to 1. The twenty districts in Tennessee which spent an average of $1,264 in current expenditure per ADA during the 1976-77 school year provided a pupil-teacher ratio of 20.8 to 1. Districts ranking in the bottom twenty in current expenditures by spending an average of $759 per ADA provided 1 teacher for each 25.0 pupils.

These data reveal a differential of more than four pupils per teacher.

Many educators believe a reduction of only one pupil per teacher makes a significant contribution in the amount of learning that can take place in a classroom setting. The data indicate that the average pupil in the top twenty spending districts could expect almost 20 percent more individual attention from his/her teacher. If all other variables were held constant, reasonableness suggests that this additional attention could and should be used to enhance the educational process within these districts.

Even though district expenditures for teacher salaries on a per pupil basis remain a function of teacher training, teacher experience, local salary supplements, and pupil-teacher ratios, the general impact of the latter can be understood from the data in Table 1.

A total of $474.1 million was spent by districts for salaries of teachers during the 1976-77 school year. This represents 54.1 percent of the total $875.8 million reported for current expenditures and exceeded total State funding of $417.9 million by $56.2 million.

Teacher Training and Experience (T and E)

The present Tennessee Foundation Program provides for additional funding based upon a measure of the training and experience of the instructional staff within each school district. Both training and experience are widely recognized as being related to the quality of teaching. Inexperience and/or limited preparation will likely result in less than desirable job performance in any profession. As a result, school systems strive to employ and to keep those teachers with good training. Through adequate salaries and good working conditions these teachers gain needed experience and are encouraged to obtain additional training. This encouragement results in a higher degree of training and experience. The T and E factor utilized by

the Tennessee public education system is indicative of the degree of success a particular system has realized toward reaching this goal.

A T and E factor of 1.000 indicates a teacher with minimum training (Bachelor's Degree) and 0 years of experience. Presently the highest T and E factor recognized for State funding is 1.536 which is earned by a teacher holding the Doctor's Degree and having 15 years or more experience.

District T and E factors range from a low of 1.078 to a high of 1.237. A training and experience factor of 1.078 indicates the average teacher in the system holds a Bachelor's Degree and has less than 6 years experience whereas a T and E factor of 1.237 indicates average training at the Master's Degree with more than 9 years experience.

An average T and E factor of 1.190 was calculated for districts which ranked as the top twenty in total expenditures per ADA while a factor of 1.149 was calculated for the bottom twenty districts. Table 2 provides the average training level and the average experience of the instructional staff in the districts studied.

As indicated in a preceding section the additional training and experience found in the high expenditure districts is magnified by the 20 percent more time which the teacher can spend with each student in these districts.

Guidance, Psychological and Attendance Services

Increased needs for school personnel functioning in the areas of guidance, psychological and attendance services have been precipitated in part by the following:

(1) Desire for early career diagnosis,

(2) Increased social problems (e.g., integration, broken homes, and drugs),

(3) Demand for assessment of group achievement, and

(4) Increased absenteeism.

A district which offers these services is more adequately providing for the needs of students than districts which do not. The top twenty districts when ranked by expenditure per ADA provided 2.268 personnel per 1000 ADM in the areas of guidance, psychology and social services. This figure can be interpreted as representing one professional serving each 444 pupils in ADM. The bottom twenty districts provided 1.143 personnel for 1000 pupils in ADM or one professional to serve each 875 pupils in ADM. The higher expenditure districts were purchasing 98.4 percent more of these professional services per pupil than the lower expenditure districts.

A strong movement is presently underway in many areas of the country to expand guidance to the elementary grades. Many educators feel grades 7-12 to be too late to guide or direct a large percentage of the student population. Obviously, with increased emphasis on specialization in providing programs to meet individual needs, more psychological personnel will be needed. If schools are going to expand their role to include all aspects of pupil needs, consideration must be given to an expansion of the area of social services.

In summary, Tennessee should carefully examine the present disparity of these services among districts to insure that these data reflect need and not simply the availability of resources.

Library Services

The school library media program "...helps implement the school's

objectives by being totally involved in the teaching/learning process."[1] Specific guidelines are set forth in the Tennessee minimum standards for the provision of library personnel. However, many districts attempt to offer this valuable service to students in excess of the minimum requirements.

Analysis of the librarians provided per 1000 pupils in ADM revealed substantial disparity of this service among the school districts in Tennessee. The top twenty spending districts were providing an average of 1.664 per 1000 pupils in ADM while the bottom twenty districts ranked by current expenditures per ADA were providing an average of 1.211. This can be further interpreted as one librarian per 601 and 826 pupils in ADM respectively. This study made no attempt to determine an ideal ratio but did quantify additional library personnel employed by the higher expenditure districts. The average child in the higher expenditure districts could expect 37.4 percent more service from library personnel than could the pupil in the lower expenditure districts.

Library and audiovisual supplies are another significant ingredient in the provision of quality library services. A total of $4.2 million was spent for these supplies during the 1976-77 school year. Substantial disparity in expenditures per ADM for library and audiovisual supplies was found to exist between the top twenty and bottom twenty districts when ranked by current expenditures per ADA. The top twenty spent $6.39 and the bottom twenty $2.62 per ADM, respectively, a 2.4 to 1 ratio. The State

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[1]Tennessee State Board of Education, Rules, Regulations and Minimum Standards, 1977-78, Nashville, Tennessee, p. 66.

average was $4.74 per ADM. Assuming comparable item pricing, students served by the higher expenditure districts could expect an average of 243.9 percent more library and audiovisual supplies to enrich their programs of education.

Instructional Supplies and Materials

Realizing that no instructional program can be successful without adequate materials and supplies, the school districts of Tennessee spent a total of over $15.8 million for this purpose during the 1976-77 school year. This total computed to an average of $18.06 per pupil in ADM. Substantial disparity in expenditures per ADM for these materials and supplies was found to exist among the 127 districts operating K-12 systems. High expenditure districts were found to be spending an average of $21.44 per ADM or 18.7 percent more than the State average while low expenditure districts were spending $11.74 per ADM or 65.0 percent of the State average expenditure. The ratio of high to low 20 district group average expenditures was 2.1 to 1. The average pupil in higher expenditure districts could expect 108.4 percent more instructional supplies and materials than the pupil in the lower expenditure districts.

Textbooks

Tennessee appropriated $5.5 million for the 1976-77 school year for purchasing and repairing textbooks used by the public schools. This amount was distributed to local systems on the basis of $6.50 per pupil in average daily attendance during the preceding school year plus approximately $11.50 per pupil increase, if any, in average daily attendance for the immediate past school year over that of the school year preceding. The Tennessee Education Finance Act of 1977 increased these amounts to $7.50 and $12.50 respectively.

A total of $6.3 million was reported as expended for textbooks by the 147 school systems in Tennessee for the 1976-77 school year. Thus, the State appropriation funded 87.0% of the total textbook expenditure.

Analysis of the disparity in textbook expenditure per ADM revealed the effect of the high percentage of State funding. The expenditure per ADM of the top twenty districts for textbooks averaged $8.23 while the expenditure for ADM of the bottom twenty districts averaged $7.59. These figures disclose a disparity of 8.9 percent in expenditure per ADM.

Maintenance and Operation of Plant

During the 1976-77 school year a total of $93.1 million was spent by the 147 school systems for maintenance and operation of school plants in Tennessee. Of this total $84.1 or 90.3 percent was derived from funds raised locally. The $9.0 - $84.1 million State-local fiscal partnership resulted in substantial disparity in expenditure per ADM for maintenance and operation. An average expenditure of $146.55 per ADM was computed for the twenty high expenditure districts while the twenty low expenditure districts were spending $59.75 per ADM. This represents a ratio of 2.5 to 1.

Comfortably operated and attractively maintained buildings are another significant ingredient in a quality school system. They are significant in helping create and to maintain an effective learning environment. Substantial per pupil expenditure disparity results from disparity of service or disparity of efficiency. In any case, establishing uniformity of quality remains a worthwhile goal.

Several different areas of service have been examined in this part of the study in an attempt to answer the question: What does the enlarged spending for education purchase in terms of additional educational services

for students? In order to facilitate a su narization of this discussion, Figure 3 and Table 2 are provided.

Access To Educational Programs

A recognized measure of program quality is associated with the number of courses offered in the high schools of a local school system. A student who is denied access to the curricular offering which best meets his individual interests and skills may fail to develop his more productive competencies which may then be doomed to a dormant state throughout his career. Contrariwise, those who are allowed the latitude of experimentation may develop capabilities which are personally rewarding and contribute to the economic well being of society. The principal thrust of this part of the study is to examine the relationship between the level of expenditure per pupil in a public school jurisdiction in Tennessee and the variety of courses made available to the students in grades nine through twelve. In order to carry out this facet of the study, 125 local school systems were considered with the number of courses offered in grades 9 through 12 and their current expenditure per pupil being compared. The data base included the Preliminary Reports of Public Schools Grades 7-12, and the Annual Statistical Report of the Department of Education for the 1976-77 school year. A total of 125 school systems was included for these comparisons because of the compatibility of retrievable data, however available data seemed sufficient for reasonably accurate observations since only two comprehensive school systems were not included. Computer print-outs which consisted of the numbers of courses, numbers of sections, and total numbers of students enrolled for each school with grades 9 through 12 in the State were

used in this part of the study. These reports were carefully studied and totals were aggregated for comparison.

A wide range of courses was disclosed to be offered varying from a high of 125 subjects to a low of 25. The per pupil expenditure ranged from a high level of $1,566 to the lowest amount of $705 per pupil. When the numbers of courses offered in the high schools of a public school system were ranked from high to low by numbers of offerings and by the current expenditure per pupil, a rank-order correlation coefficient of +.45 was calculated. Such a coefficient suggests a degree of concurrence but more meaningful relationships and clearer differentiations can be observed when the top and bottom groupings are compared. The top ten systems ranked according to current expenditure per pupil revealed an average number of 81.2 course offerings with the bottom ten systems having an average of 40.8 subjects taught. When the top and bottom groups are enlarged to include twenty school systems each, the average number of courses in the highest expenditure group drops to 77.0 and the lowest group reveals 40.6 courses to be available.

In an effort to compare similar variables, the current local unequalized expenditures per pupil were ranked along with the numbers of subjects offered by the high schools of a local education agency. A rank-order correlation was calculated with a resulting coefficient of +.59. The top ten systems in local unequalized expenditure per pupil provided an average of 83.3 course offerings, and the bottom ten local expenditure districts offered an average of 38.1 courses to the students enrolled in grades 9 through 12. Expanding to twenty the groups, compared in local unequalized expenditure per pupil in average daily attendance, revealed an

average curricular offering of 77.5 subjects in the top twenty districts, and the bottom twenty school systems afforded students an average of 40.4 courses. Both the level of total current expenditure per pupil and the local unequalized expenditure per pupil appear to correlate highly with the variety of subjects taught in a local school system. The level of local unequalized funds per pupil correlates better than total current expenditure per pupil with the numbers of courses being offered. Disparity in the variety of courses offered resulting from local unequalized funds is more evident at both the upper and lower end of the expenditure scale. The relationship between courses offered and expenditure per pupil from local funds appears to be substantial.

Since local unequalized funds per student appear to relate so well with the variety or numbers of selective courses offered, other comparisons were made involving more discrete categories of subject matter. The top ten spenders in current local unequalized funds per pupil in average daily attendance provided an average of 2.7 courses in art. When the group is enlarged to twenty school systems, the average number of art courses offered becomes 2.75. Conversely, only three of the lowest ten local unequalized spenders and seven of the bottom twenty districts offered courses in art for grades 9 through 12. The average number of art courses per system offered in the bottom group of ten was .5 and .65 for the bottom twenty.

When mathematics is subjected to the same kind of comparisons with the number of courses offered considered as one dimension and local unequalized spending per pupil as a second, a comparable kind of relationship is revealed. The top ten systems in current local unequalized funds

per pupil offered 5.9 courses in mathematics with the top twenty providing an average of 6.05 courses. The bottom ten local unequalized spenders afforded an average of 4.0 courses in mathematics and the bottom twenty offered a mean number of 4.3 mathematics courses.

When similar observations are attempted with local unequalized current funds per pupil in average daily attendance employed as one variable and the number of science courses as the other, like relationships are revealed. The top ten systems in local unequalized expenditure per pupil offered an average of 6.2 courses in science and the bottom ten only 3.3 science courses. The top twenty spenders of local funds per pupil had an average of 5.95 courses in science while the bottom twenty provided an average of 3.5 science offerings. The relationship between local spending and the degree of variety in science courses appears to be substantial.

In the basic area of language arts differences in numbers of courses exist among school systems. Language arts courses include those fundamental experiences which improve communication skills, including foreign languages and therefore constitute a primary part of necessary learning skills. A variety of offerings seems to be of utmost importance in this area. The top ten systems in current expenditure per pupil from unequalized local funds offered an average of 12.6 courses per system while the top twenty districts provided 12.25 courses in language arts as an average figure. At the other end of the expenditure spectrum the bottom ten systems offered an average of 5.6 courses. Expanding the bottom group to the twenty lowest local spenders per pupil did not change the average of 5.6 language arts courses provided per school system.

As was disclosed in other comparisons, students in school systems with

the highest level of local expenditure per pupil had access to a greater variety of courses in social studies, music, and to the academic or basic subject areas considered collectively. Tables 3 through 11 give more complete comparisons of the numbers of subjects offered in grades 9 through 12 in local school systems which are ranked according to current expenditure per pupil.

The preceding comparisons reveal that the school systems which spent most in current costs per pupil and those school districts which spent the highest level of current funds per pupil from local funds offered the greater variety of subject matter to the pupils in grades 9 through 12. While the connection between the level of expenditures and the number of subjects offered in selected elements of the school program is not complete, the relationship between the two variables is substantial.

Summary

A significant disparity exists in the level of current expenditure per pupil among the various local education agencies in Tennessee. There is a strong relationship between the level of total current expenditure per pupil in average daily attendance and the level of current expenditure per pupil from unequalized local funds. The ratio between the expenditure levels per pupil of the high and low revenue districts approximates two to one. When only local funds per pupil are considered, the disparity is much greater, approximately ten to one.

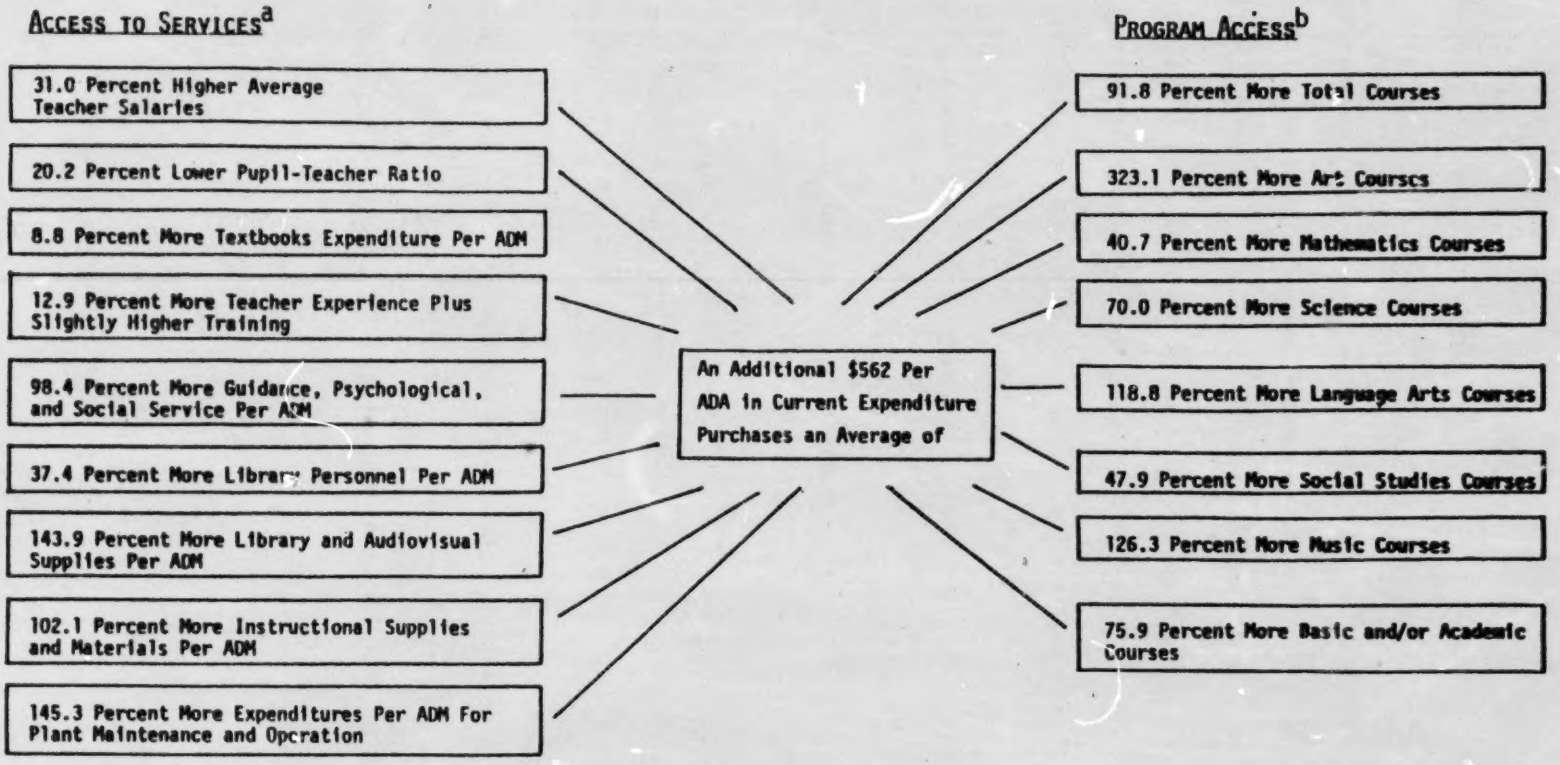
The additional cost per pupil in the high expenditure districts is related to providing additional services or programs for pupils in the public schools usually associated with higher quality. Students in the high expenditure districts had the advantages of lower pupil-teacher ratios;

higher levels of training and experience of teachers; more guidance, psychological, and social services; the benefits of greater numbers of librarians; higher expenditures for instructional materials and supplies; slightly higher expenditures for textbooks; and much greater expenditures for maintenance and operation of school plants.

The high schools located in the higher expenditure school systems offered a greater variety of subjects to students in grades 9 through 12. This observation was consistent for all of the basic academic subjects taken collectively and also when the number of individual subjects was compared between the high and low expenditure districts. Additionally, the greater variety of high school subjects seems to be more related to a high expenditure from local funds than to a high total current expenditure per pupil.

This study does not compare the achievement of students in one school system with the academic accomplishments of those in another. It seems clear, however, that students in the highest expenditure school system have greater access to classroom teacher time along with the specialized services of other professional personnel. Access to a more varied academic program seems also to confer upon the students of high expenditure districts greater opportunities for the kinds of programs of education which the individual student needs and desires.

Figure 3. WHAT DOES THE EXTRA DOLLAR PURCHASE?


ACCESS TO SERVICES[a]
31.0 Percent Higher Average Teacher Salaries
20.2 Percent Lower Pupil-Teacher Ratio
8.8 Percent More Textbooks Expenditure Per ADM
12.9 Percent More Teacher Experience Plus Slightly Higher Training
98.4 Percent More Guidance, Psychological, and Social Service Per ADM
37.4 Percent More Library Personnel Per ADM
143.9 Percent More Library and Audiovisual Supplies Per ADM
102.1 Percent More Instructional Supplies and Materials Per ADM
145.3 Percent More Expenditures Per ADM For Plant Maintenance and Operation
An Additional $562 Per ADA in Current Expenditure Purchases an Average of
PROGRAM ACCESS[b]
91.8 Percent More Total Courses
323.1 Percent More Art Courses
40.7 Percent More Mathematics Courses
70.0 Percent More Science Courses
118.8 Percent More Language Arts Courses
47.9 Percent More Social Studies Courses
126.3 Percent More Music Courses
75.9 Percent More Basic and/or Academic Courses

[a]Source: Calculated from Annual Statistical Report of Tennessee Department of Education, 1976-77. These data pertain to school systems with grades K-12.

[b]Source: Preliminary Report Based On Minimum Requirements For The Approval Of Public Schools, Grades 7-12, Fall 1976. Course offerings are for grades 9-12.

APPENDIX

TABLE I

Pupil-Teacher Ratio and Expenditure Disparity Among K-12 Districts[a] In Tennessee Ranked by Total Current Expenditure Per ADA, 1976-77

District Rank (1)	ADM[b] Per Classroom Teacher (2)	Teacher Salary[c] Per ADA (3)	Total Current Expenditure Per ADA (4)	Percent (3) is of (4) (5)
1	18.3	$862	$1,566	55.0
2	17.8	807	1,443	55.9
3	18.5	795	1,442	55.1
4	20.6	739	1,412	52.3
5	15.2	816	1,404	58.1
6	18.3	741	1,381	53.7
7	20.3	691	1,370	50.4
8	25.2	686	1,335	51.4
9	26.4	637	1,287	49.5
10	18.7	649	1,283	50.6
11	18.8	636	1,223	52.0
12	19.4	547	1,210	45.2
13	22.4	645	1,184	54.5
14	24.8	633	1,148	55.1
15	22.9	614	1,123	54.7
16	21.2	644	1,123	57.4
17	19.2	535	1,114	48.0
18	22.7	563	1,087	51.8
19	19.0	627	1,080	58.1
20	21.4	643	1,066	60.3
108	22.1	467	803	58.2
109	25.2	448	802	55.9
110	29.8	493	796	61.9
111	22.3	480	789	60.8

TABLE 1 (continued)

District Rank (1)	ADM[b] Per Classroom Teacher (2)	Teacher Salary[c] Per ADA (3)	Total Current Expenditure Per ADA (4)	Percent (3) is of (4) (5)
112	24.0	$492	$784	58.2
113	21.1	495	782	63.3
114	19.5	501	780	64.2
115	24.8	439	774	56.7
116	22.0	509	773	65.9
117	23.4	461	772	59.7
118	23.6	414	770	53.8
119	31.8	357	764	46.7
120	26.5	444	739	60.1
121	27.9	439	736	59.7
122	24.2	435	736	59.1
123	24.2	422	722	58.5
124	24.5	425	718	59.2
125	23.9	409	716	57.1
126	25.2	415	710	58.5
127	27.7	424	705	60.1
Top Twenty Average	20.8	676	1,317	51.3
Bottom Twenty Average	25.0	448	775	59.3
State	21.9	577	1,066	54.1

Source: 1977 Annual Statistical Report of the Tennessee Department of Education.

[a]Only K-12 districts were used eliminating 20 districts.

[b]ADM was used because teachers are employed to serve those pupils enrolled.

[c]Consists of salaries for teachers in regular, handicapped, and vocational programs.

TABLE 2

Educational Service Disparity Between High and Low K-12 Districts
Ranked by Total Current Expenditure Per ADA, 1976-77

District Rank	Average Teacher Training[a]	Average Teacher Experience (Years)	Number of Pupils Served by Each		Expenditures Per ADM for			
			Guidance, Psychological and Attendance Professional	Librarian	Library and Audiovisual Supplies	Instructional Supplies and Materials	Textbooks	Maintenance and Operation
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1	1.73	14.1	364	530	$ 7.88	$ 32.23	$ 8.42	$ 163.27
2	1.52	15.1	686	585	9.55	34.57	9.17	174.20
3	1.58	14.8	352	469	11.71	43.19	13.74	164.72
4	1.78	13.3	559	576	6.86	20.11	7.14	160.98
5	1.42	12.7	499	427	4.83	33.84	7.19	108.29
6	1.35	12.5	564	410	9.55	19.72	6.42	157.23
7	1.55	13.4	377	612	6.05	23.43	6.13	159.48
8	1.40	12.5	221	685	6.29	16.45	6.59	131.35
9	1.47	10.7	697	558	5.52	17.19	7.53	99.79
10	1.20	12.9	726	967	3.51	16.97	7.16	136.70
11	1.37	12.8	553	596	5.23	24.81	11.99	162.67
12	1.26	11.6	765	1,529	4.47	24.64	6.71	115.82
13	1.26	12.9	399	465	8.07	22.18	8.71	120.94
14	1.45	12.0	330	577	10.78	27.34	8.64	138.18
15	1.33	12.4	808	779	5.93	13.03	12.16	97.86
16	1.37	13.7	561	467	4.76	25.94	7.97	94.68
17	1.33	17.0	394	394	7.82	23.23	8.58	86.11
18	1.49	10.9	1,127	714	5.40	16.49	8.88	136.10

TABLE 2 (continued)

District Rank	Average Teacher Training[a]	Average Teacher Experience (Years)	Number of Pupils Served by Each		Expenditures Per ADM for			
			Guidance, Psychological and Attendance Professional	Librarian	Library and Audiovisual Supplies	Instructional Supplies and Materials	Textbooks	Maintenance and Operation
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
19	1.39	12.2	663	663	$ 6.73	$ 25.96	$ 7.02	$ 119.14
20	1.48	11.4	560	598	7.48	27.98	6.67	123.05
108	1.14	9.4	287		2.31	11.42	9.25	61.25
109	1.44	13.8	769	769	7.26	19.42	9.79	59.28
110	1.29	13.2	928	1,168	2.12	7.25	4.15	74.63
111	1.26	12.1	926	926	2.59	14.08	4.56	39.51
112	1.62	13.1	612	612	0.32	11.23	9.08	89.85
113	1.13	12.0	-	442	1.98	17.15	8.69	66.53
114	1.31	5.7	-	-	1.68	17.86	4.95	59.48
115	1.15	12.9	745	745	0.30	2.83	10.01	55.84
116	1.17	14.2	-	-	1.46	12.17	6.66	81.53
117	1.43	11.7	506	506	2.25	22.25	6.65	67.34
118	.96	11.6	849	566	4.79	5.99	5.94	48.91
119	1.10	13.7	806	1,209	5.65	13.61	5.35	65.44
120	1.13	13.4	556	556	0.68	2.64	5.93	82.30
121	1.19	8.4	1,214	971	3.60	12.34	7.07	67.11
122	1.31	12.9	990	330	3.16	12.41	11.07	52.09
123	1.22	14.1	1,211	807	1.13	13.96	12.64	48.79

TABLE 2 (continued)

District Rank	Average Teacher Training[a]	Average Teacher Experience (Years)	Number of Pupils Served by Each		Expenditures Per ADM for			
			Guidance, Psychological and Attendance Professional	Librarian	Library and Audiovisual Supplies	Instructional Supplies and Materials	Textbooks	Maintenance and Operation
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
124	1.67	11.0	-	-	$ 1.34	$ 10.43	$ 4.43	$ 47.23
125	1.19	10.6	1,138	853	2.58	5.14	7.74	45.17
126	1.37	9.6	798	798	2.05	4.58	6.77	61.82
127	1.37	11.8	818	818	1.95	18.04	9.04	50.27
Top 20 Average[b]	1.44	13.1	441	601	6.39	21.44	7.69	146.55
Bottom 20 Average[b]	1.27	11.6	875	826	2.62	10.61	7.06	59.75

[a]BA = 1.00, MA = 2.00, MA + 45 = 3.00, EdS = 4.00, EdD = 5.00

[b]Weighted Averages of each group

Source: Annual Statistical Report of the Tennessee Department of Education, 1977.

TABLE 3

TOTAL COURSES OFFERED IN GRADES 9-12 BY
LEVEL OF CURRENT EXPENDITURE PER PUPIL
1976-77

School System Rank[a]	No. Courses[b]	School System Rank[a]	No. Courses[b]
1	66	125	37
2	94	124	55
3	37	123	40
4	129	122	26
5	94	121	46
6	77	120	33
7	95	119	67
8	103	118	29
9	60	117	33
10	57	116	42
11	118	115	48
12	43	114	25
13	81	113	36
14	71	112	29
15	88	111	40
16	61	110	46
17	30	109	55
18	95	108	63
19	63	107	31
20	78	106	31
Average Top Ten	81.2	Average Bottom Ten	40.8
Average Top Twenty	77.0	Average Bottom Twenty	40.6

[a]Source: Calculated from Annual Statistical Report of Tennessee Department of Education, 1976-77.

[b]Source: Preliminary Report Based On Minimum Requirements For The Approval of Public Schools, Grades 7-12, Fall 1976.

TABLE 4

TOTAL COURSES OFFERED IN GRADES 9-12 BY LEVEL OF UNEQUALIZED LOCAL CURRENT FUNDS PER PUPIL

1976-77

School System Rank[a]	No. Courses[b]	School System Rank[a]	No. Courses[b]
1	66	125	25
2	94	124	43
3	37	123	40
4	129	122	55
5	77	121	40
6	94	120	33
7	57	119	36
8	103	118	35
9	95	117	48
10	81	116	26
11	118	115	46
12	63	114	60
13	71	113	30
14	88	112	42
15	61	111	37
16	74	110	35
17	60	109	55
18	40	108	31
19	47	107	44
20	95	106	47
Average Top Ten	83.3	Average Bottom Ten	38.1
Average Top Twenty	77.5	Average Bottom Twenty	40.4

[a]Source: Calculated from Annual Statistical Report of Tennessee Department of Education, 1976-77.

[b]Source: Preliminary Report Based On Minimum Requirements For The Approval Of Public Schools, Grades 7-12, Fall 1976.

TABLE 5

ART COURSES OFFERED IN GRADES 9-12 BY LEVEL OF UNEQUALIZED LOCAL CURRENT FUNDS PER PUPIL

1976-77

School System Rank[a]	No. Courses[b]	School System Rank[a]	No. Courses[b]
1	1	125	0
2	3	124	2
3	4	123	0
4	4	122	1
5	3	121	0
6	3	120	0
7	0	119	2
8	3	118	0
9	4	117	0
10	2	116	0
11	4	115	0
12	4	114	2
13	1	113	0
14	4	112	0
15	3	111	0
16	3	110	1
17	3	109	3
18	1	108	0
19	2	107	2
20	3	106	0
Average Top Ten	2.7	Average Bottom Ten	.5
Average Top Twenty	2.75	Average Bottom Twenty	.65

[a]Source: Calculated from Annual Statistical Report of Tennessee Department of Education, 1976-77.

[b]Source: Preliminary Report Based Upon Minimum Requirements For The Approval of Public Schools, Grades 7-12, Fall 1976.

TABLE 6

MATHEMATICS COURSES OFFERED IN GRADES 9-12 BY LEVEL OF UNEQUALIZED LOCAL CURRENT FUNDS PER PUPIL

1976-77

School System Rank[a]	No. Courses[b]	School System Rank[a]	No. Courses[b]
1	7	125	5
2	7	124	4
3	5	123	4
4	8	122	4
5	5	121	3
6	5	120	4
7	5	119	4
8	6	118	5
9	6	117	5
10	5	116	2
11	8	115	5
12	6	114	5
13	7	113	3
14	6	112	5
15	5	111	5
16	6	110	5
17	7	109	6
18	6	108	3
19	5	107	4
20	6	106	5
Average Top Ten	5.9	Average Bottom Ten	4.0
Average Top Twenty	6.05	Average Bottom Twenty	4.3

[a]Source: Calculated from Annual Statistical Report of Tennessee Department of Education, 1976-77.

[b]Source: Preliminary Report Based On Minimum Requirements For The Approval of Public Schools, Grades 7-12, Fall 1976.

TABLE 7

SCIENCE COURSES OFFERED IN GRADES 9-12 BY LEVEL OF UNEQUALIZED LOCAL CURRENT FUNDS PER PUPIL

1976-77

School System Rank[a]	No. Courses[b]	School System Rank[a]	No. Courses[b]
1	9	125	3
2	9	124	2
3	3	123	3
4	8	122	4
5	6	121	2
6	6	120	4
7	4	119	3
8	5	118	4
9	6	117	5
10	6	116	3
11	7	115	5
12	7	114	6
13	5	113	3
14	6	112	4
15	6	111	4
16	5	110	3
17	6	109	4
18	4	108	3
19	4	107	2
20	7	106	3
Average Top Ten	6.2	Average Bottom Ten	3.3
Average Top Twenty	5.95	Average Bottom Twenty	3.5

[a]Source: Calculated from Annual Statistical Report of Tennessee Department of Education, 1976-77.

[b]Source: Preliminary Report Based On Minimum Requirements For The Approval of Public Schools, Grades 7-12, Fall 1976.

TABLE 8

LANGUAGE ARTS COURSES OFFERED IN GRADES 9-12 BY LEVEL OF UNEQUALIZED LOCAL CURRENT FUNDS PER PUPIL

1976-77

School System Rank[a]	No. Courses[b]	School System Rank[a]	No. Courses[b]
1	10	125	5
2	19	124	5
3	6	123	6
4	20	122	6
5	15	121	5
6	13	120	6
7	8	119	7
8	12	118	6
9	12	117	6
10	11	116	4
11	18	115	6
12	11	114	7
13	14	113	5
14	13	112	5
15	8	111	7
16	9	110	5
17	9	109	6
18	8	108	5
19	10	107	5
20	19	106	5
Average Top Ten	12.6	Average Bottom Ten	5.6
Average Top Twenty	12.25	Average Bottom Twenty	5.6

[a]Source: Calculated from Annual Statistical Report of Tennessee Department of Education, 1976-77.

[b]Source: Preliminary Report Based On Minimum Requirements For The Approval Of Public Schools, Grades 7-12, Fall 1976.

TABLE 9

SOCIAL STUDIES COURSES OFFERED IN GRADES 9-12 BY LEVEL OF UNEQUALIZED LOCAL CURRENT FUNDS PER PUPIL

1976-77

School System Rank[a]	No. Courses[b]	School System Rank[a]	No. Courses[b]
1	6	125	3
2	9	124	6
3	3	123	6
4	9	122	5
5	8	121	2
6	8	120	6
7	8	119	4
8	10	118	6
9	7	117	6
10	8	116	3
11	9	115	5
12	5	114	6
13	6	113	4
14	7	112	4
15	4	111	5
16	8	110	3
17	6	109	4
18	5	108	4
19	6	107	6
20	7	106	6
Average Top Ten	7.6	Average Bottom Ten	4.7
Average Top Twenty	6.95	Average Bottom Twenty	4.7

[a]Source: Calculated from Annual Statistical Report of Tennessee Department of Education, 1976-77.

[b]Source: Preliminary Report Based On Minimum Requirements For The Approval Of Public Schools, Grades 7-12, Fall 1976.

TABLE 10

NUMBER OF MUSIC COURSES OFFERED IN GRADES 9-12 BY LEVEL OF UNEQUALIZED LOCAL CURRENT FUNDS PER PUPIL

1976-77

School System Rank[a]	No. Courses[b]	School System Rank[a]	No. Courses[b]
1	6	125	0
2	5	124	2
3	2	123	3
4	6	122	4
5	5	121	0
6	5	120	0
7	4	119	2
8	7	118	1
9	2	117	3
10	5	116	0
11	6	115	3
12	3	114	4
13	4	113	0
14	5	112	3
15	4	111	2
16	5	110	2
17	4	109	6
18	3	108	0
19	1	107	2
20	4	106	1
Average Top Ten	4.7	Average Bottom Ten	1.5
Average Top Twenty	4.3	Average Bottom Twenty	1.9

[a]Source: Calculated from Annual Statistical Report of Tennessee Department of Education, 1976-77.

[b]Source: Preliminary Report Based On Minimum Requirements For The Approval Of Public Schools, Grades 7-12, Fall 1976.

TABLE 11

NUMBER OF BASIC AND ACADEMIC COURSES OFFERED IN GRADES 9-12 BY LEVEL OF UNEQUALIZED LOCAL CURRENT FUNDS PER PUPIL

1976-77

School System Rank[a]	No. Courses[b]	School System Rank[a]	No. Courses[b]
1	42	125	18
2	56	124	25
3	27	123	26
4	59	122	28
5	46	121	16
6	44	120	25
7	34	119	26
8	48	118	26
9	44	117	28
10	44	116	14
11	60	115	28
12	39	114	35
13	43	113	18
14	48	112	25
15	34	111	27
16	41	110	23
17	38	109	33
18	30	108	19
19	32	107	25
20	53	106	25
Average Top Ten	44.4	Average Bottom Ten	23.2
Average Top Twenty	43.1	Average Bottom Twenty	24.5

[a]Source: Calculated from Annual Statistical Report of Tennessee Department of Education, 1976-77.

[b]Source: Preliminary Report Based On Minimum Requirements For The Approval Of Public Schools, Grades 7-12, Fall 1976.